ABSTRACT

Methods to identify inter-carrier telephone calls in a telephone system that are being mis-routed in such a way as to violate existing regulatory tariffs and/or established inter-carrier contracts. The common name for this manipulation is "arbitrage", and the intent of the perpetrators is to take advantage of lower rates associated with the delivery of telephone traffic via other routes. Through the processes of collecting call detail records and their correlation in representative embodiments, various call "legs" associated with the same call can be identified, and a more accurate "compound" call record can be made that incorporates call routing information obtained from the individual call legs. A statistical analysis can then be performed to more clearly illuminate any arbitrage.

Message	Parameter	Description
initial address message (IAM)		INITIAL ADDRESS MESSAGE
	Originating Point Code (OPC)	The SS7 node (e.g. switching office or STP) that is sending the message **[T130]**
	Destination Point Code (DPC)	The SS7 node (e.g switching office or STP) that the message is being sent to **[T160]**
	Calling Number	The calling number of the user making the call **[T110]**
	Charge Number	The charge number of the user making the call **[T120]**
	Called Number	The number dialed by the user **[T170]**
	Carrier Indentification Code	The IXC selected by the user (e.g. via 1010XXX)
	Forward Interworking Parameter **[T140]**	An indicator as to whether SS7 or non-SS7 interworking was encountered prior to this point in the call
address complete message (ACM)		ADDRESS COMPLETE MESSAGE
	OPC/DPC	As above
	Backward Interworking Parameter **[T150]**	An indicator as to whether SS7 or non-SS7 inter-working was encountered ahead of this point in the call
answer message (ANM)		ANSWER MESSAGE
	OPC/DPC	As above
release message (REL)		RELEASE MESSAGE
	OPC/DPC	As Above
	Release Cause Code	An indication of the status of the call (e.g. answered, busy)
release complete message (RLC)		RELEASE COMPLETE MESSAGE
	OPC/DPC	As above

T100   TABLE 1

initial address message (IAM) timestamp **[T210]**	The time the trunk was seized
address complete message (ACM) timestamp	The time the called telephone began ringing
answer message (ANM) timestamp **[T230]**	The time the called telephone was answered
release message (REL) timestamp **[T220]**	The time the first of either the called or calling telephone was hung up.
Release complete message (RLC) timestamp	The time the second of the called or calling telephone was hung up.

Table 2